Shyam Sivasubramanian

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Education

Purdue University West Lafayette, IN
Bachelor of Science in Computer Science and Data Science *Aug. 2023 – May 2027*

Technical Skills

Programming Languages: Java, R, Python, C, C++, Assembly, SQL, GLSL, HTML, CSS, JavaScript
Tools & Libraries: Mediapipe, Scikit-Learn, OpenCV, Pandas, Numpy, Virtual Reality, Plotnine, Statsmodels, Stable Baselines 3, PyTorch, Git, CLI, Linux, ROS, OpenGL, MedGemma, OOP, Docker

Experience

Researcher Aug. 2024 – Present
Purdue CoMMA Lab

- Developed and deployed real-time computer vision algorithms on robot manipulators to detect and avoid collisions, enabling safer autonomous operation.
- Contributed to Foam, an open-source mesh simplification tool, by creating spherical approximations of robot geometries from URDF files to reduce computational overhead in robotic simulations.
- Designed a robot control system utilizing data structures and algorithms to aid in robot testing and manipulation.

Data Science Intern May 2025 – Aug. 2025
Karyon.bio

- Developed supervised machine learning models with MedGemma, Pandas, and Statsmodels to predict disease likelihoods (fatty liver disease, diabetes, cervical cancer, and breast cancer) from clinical data and medical scans.
- Interpreted model outputs and conducted comparative evaluations to identify the most effective classification approach for deployment.
- Integrated the best-performing model into a medical scan application, enabling real-time disease likelihood predictions for clinicians.
- Created and presented data visualizations with Plotnine to communicate clinical insights and patient risk profiles to both technical and non-technical stakeholders.

Projects

DeepRow | *Python, Scikit-Learn, Numpy, OpenCV, MediaPipe* May 2023

- Developed a computer vision system to evaluate rowing technique using pose estimation data from professional athletes.
- Implemented feature extraction pipelines to quantify movement patterns and detect form deviations.
- Trained and validated a Random Forest Classifier to categorize rowing form quality with interpretable performance metrics.
- Designed and tested the solution in Jupyter Notebook, enabling visual feedback and reproducible experimentation.

Minesweeper Auto Solver | *HTML, CSS, JavaScript* Jul. 2025

- Designed an algorithmic solver for Minesweeper that applied hierarchical logical reasoning move safely while avoiding mines
- Implemented puzzle generation and solver visualization to demonstrate algorithm performance in real time.
- Built an interactive, browser-based user interface for seamless play and solver integration.

Shader Study | *GLSL, OpenGL* Jun. 2024

- Designed generative art and visual simulations using GLSL, applying principles from multivariable calculus, trigonometry, and linear algebra.
- Explored advanced graphics programming techniques including noise functions, and real-time animation pipelines.
- Built a portfolio of shaders showcasing procedural textures, dynamic patterns, and artistic visual effects.
- Strengthened understanding of GPU programming and parallel computation through hands-on shader design and optimization.